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Anti-allergic potential of *Typhonium blumei*: Inhibition of degranulation via suppression of PI3K/PLCγ2 phosphorylation and calcium influx

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ABSTRACT

Background: *Typhonium blumei* Nicolson & Sivadasan (Araceae) is a traditional Chinese medicinal herb possessing detumescent, detoxifying, and anti-inflammatory activities. It is used in Taiwan as a folk medicine to treat cancer and inflammatory diseases. *Typhonium blumei* is usually not distinguished from *Typhonium roxburghii* Schott and they are commonly used interchangeably.
Purpose: To evaluate and compare the anti-allergic and anti-inflammatory properties of *T. blumei* and *T. roxburghii*, their composition profiles and molecular basis of the anti-allergic effect.
Methods: The methanolic plant extracts were partitioned with different solvents to obtain the nonpolar fractions. The anti-allergic activity of the nonpolar fractions was assessed by A23187- and antigen-induced degranulation assays using RBL-2H3 mast cells. Several molecular targets were investigated: FcεRI receptor expression by flow cytometry, calcium influx by live cells imaging fluorescent microscopy, cytokines mRNA expression by RT-PCR, and protein expression by Western blotting. The anti-inflammatory activity was evaluated using superoxide anion and elastase release assays in human neutrophils. TLC, NMR and GC–MS analyses were conducted to evaluate the chemical composition of the fractions.

Abbreviations: TB, *Typhonium blumei*; TR, *Typhonium roxburghii*; TBE, *Typhonium blumei* whole plant ethyl acetate fraction; TBD, *Typhonium blumei* whole plant dichloromethane fraction; TBLE, *Typhonium blumei* leaves ethyl acetate fraction; TBLD, *Typhonium blumei* leaves dichloromethane fraction; TBRE, *Typhonium blumei* rhizomes ethyl acetate fraction; TBRD, *Typhonium blumei* rhizomes dichloromethane fraction; TRE, *Typhonium roxburghii* whole plant ethyl acetate fraction; TRD, *Typhonium roxburghii* whole plant dichloromethane fraction; TRLE, *Typhonium roxburghii* leaves ethyl acetate fraction; TRLD, *Typhonium roxburghii* leaves dichloromethane fraction; TRRE, *Typhonium roxburghii* rhizomes ethyl acetate fraction; TRRD, *Typhonium roxburghii* rhizomes dichloromethane fraction; RBL, rat basophilic leukemia; DNP-BSA, dinitrophenyl-bovine serum albumin.

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